Vol. V No. 1
1977

THE EFFECT OF THE INFUSION OF SOME MEDICINAL PLANTS ON THE ISOLATED RABBIT JEJUNUM

B. Dzulkarnain* and B. Wahjoedi*.

Pengaruh infus daun Artemisia vulgaris LINN.; Artemisia cina BERG; Euphatorium triplinerve VAHL, Hemigraphis colorata HALL; Ruta graveolens AUCT dan buah Litsea cubeba PERS telah diteliti terhadap kontraksi usus kelinci terisolasi. Hanya Ruta graveolens AUCT dengan dosis 1 ml/kg infus 10 persen dalam 50 ml Tyrode mengurangi tonus dan amplitude kontraksi usus kelinci. Dianjurkan untuk meneliti farmakodinami komponen-komponen daun Ruta graveolens AUCT terutama terhadap usus kelinci terisolasi.

The infusion of the leaves of *Artemisia vulgaris LINN* and *Ruta graveolens AUCT* are used as an antispasmodic agent. The infusion or decoction of the leaves of *Euphatorium triplinerve VAHL* is used against diarrhoea. *Litsea subeba PERS* fruit as a substitute of Piper cubeba fruits and is used against dysentry, while *Hemigraphis colorata HALL* is used as a diuretic.

Ruta graveolens AUCT chemically contain rutine (glycoside, flavonoid) rutoside. *Euphatorium triplinerve VAHL* contains essential oil, yapin. *Artemisia vulgaris LINN* contains essential oil and adenim.

The potasium present in *Hemigraphis colorata HALL* might explain the diuretic effect of the plant, but no pharmacodynamic investigation was done.

Due to its use *Artemisia vulgaris LINN, Artemisia cina BERG, Euphatorium triplinerve VAHL, Hemigraphis colorata HALL, Litsea cubeba PERS* and *Ruta graveolens AUCT* were selected to be tested on the isolated rabbit jejunum.

MATERIALS AND METHODS

The material for investigation was obtained from the Hortus Medicus in Tawangmangu, Central Java. For confirmation a pharmacognostic checking was done.

The material was dried at temperature not over 60°C, powdered and sieved through a 48 mesh sieve. An infusion was the prepared according to the Indonesian Pharmacopoea II. 1972.

The isolated jejunum was prepared from a freshly killed rabbit and pendular contractions registered on a Multipurpose Polygraph RM 45 via a force and displacement strain gauge transducer SB 1 T after amplification by a carrier amplifier all Nihon Kohden made.
The isolated jejunum was left in contact to the infusion in a Tyrode solution bath at a concentration of 1 ml/50 ml bath, for 1 minute. It was washed twice at an interval of 2 minutes before the next administration of the infusion.

RESULTS

A concentration of 1 ml of a 10 percent *R. graveolens* infusion in 50 ml of Tyrode decreased the tonus of the intestine and amplitude of the pendular contraction (fig. VII). As seen from the registrations all other infusions had no or no clear effect on the tonus of the intestine, amplitude of the contractions as well as on the frequency of the contractions (fig. I, II, III, IV, V, and VI). The effect of the different extracts are simplified in the table.

* Drug Research Centre, National Institute of Health Research and Development, Jakarta.
Received 28 December 1976.

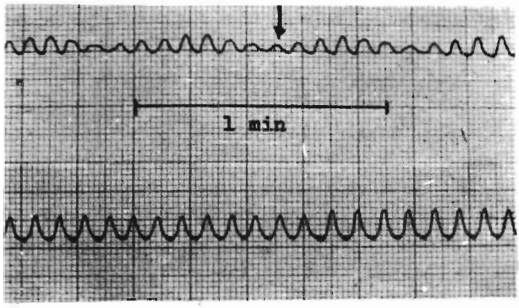

Fig. I 2ml NaCL 0,9 percent

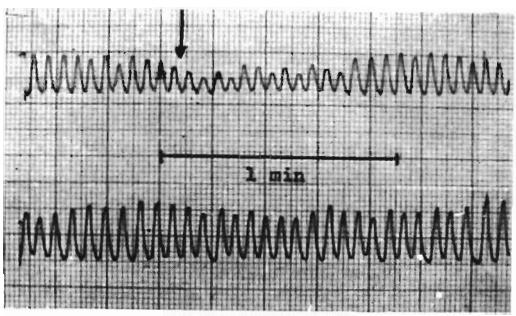

Fig. II 1ml *A.vulgaris* 10 percent

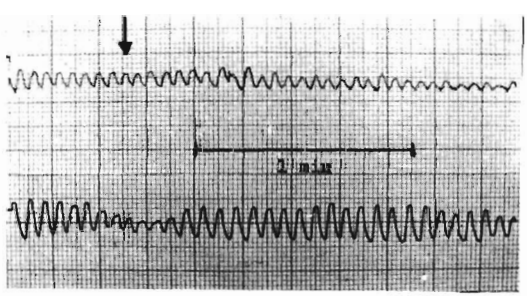

Fig. III 1ml *A. cina* 10 percent

Simultanous registration of the contractions of 2 seperate pieces of isolated rabbid

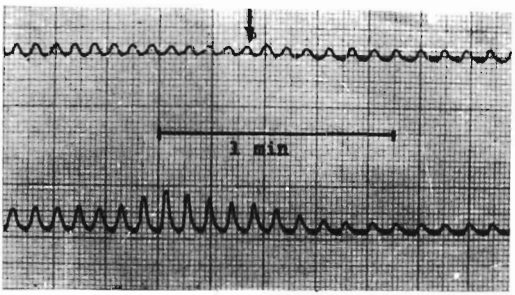

Fig. IV 1ml *E. triplinerve* 10 percent

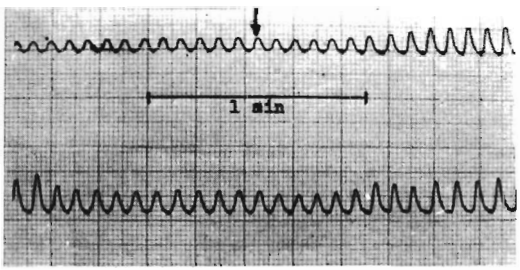

Fig. V 1 ml *H. colorata* 10 percent

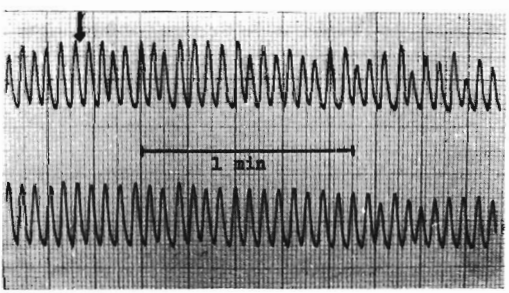

Fig.\VI 1 ml *L. cubeba* 10 percent

Simultanous registration of the contractions of 2 seperate pieces of isolated rabbit jejunum.

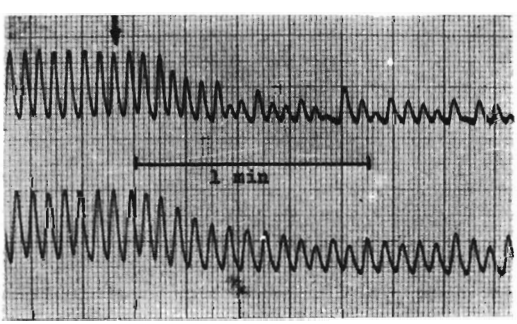

Fig. VII. 1 ml *R. graveolens* 10 percent

Simultanous registration of the contractions of 2 seperate pieces of rabbit jejunum.

Table The influence of extract on the rabbit jejunum contractions.

Material	Contraction of rabbit jejunum		
	tonus	amplitude	frequency
2 mlNa Cl 0,9 percent	0	0	0
1 ml *A. vulgaris* 10 percent	0	0	0
1 ml *A. cina* 10 percent	0	±	0
1 ml *E. triplinerve* 10 percent	0	±	0
1 ml *H. colorata* 10 percent	0	±	0
1 ml *L. cubeba* 10 percent	0	±	0
1 ml *R. graveolens* 10 percent	–	–	0

0 = no effect is seen ; ± = no consistent effect.
– = decrease of the condition.

DISCUSSIONS AND CONSCLUSION

The infusion of *A. vulgaris* and *R.graveolens* used as an antispasmodic may act directly on the smooth muscle or via the autonomic nervous system. *A.cina* as an anthelmintic, *E. triplinerve* as an antidiarrhoea, *L. cubeba* fruit as a substitute of *Piper cubeba* fruit, against dysentry and *H. colorata* as a diuretic may act directly on the smooth muscle respectively of the intestine or ureter or via the autonomic nervous system, that is a relaxation of the intestine or ureter.

The results showed that only *R. graveolens* at a dose of 1 ml of 10 percent infusion in 50 ml Tyrode both decreased the tonus and amplitude of the isolated rabbit jejunum. The rest of the subtances showed no or uncertain effect which may be due to the dose which was still too low or might not exert any effect, directly or via other system.

One of the substances present in *R. graveolens* is rutine. Being a flavonoid this might be one of the substances causing a depressive effect on the isolated intestinal contraction.

It is advised to determine the pharmacodinamic action of the components of *R. graveolens* especially on the isolated rabbit jejunum.

ACKNOWLEDGEMENTS

The authors are greatful to the help of the Hortus Medicus, Institute of Agriculture Research and Development in supplying the raw material, and the help offered by technicians in doing the experiments.

REFERENCES

Bohm, K. (1968) The Flavonoids. Editio Cautol K.G. Rulendorf. Wurtt. pp: 88 – 89

Chopra, R.N., Nayar, S.L. Chopra, I.C. (1956). Glossary of India Medicinal Plants. Council of Scientific & Industrial Research. New Delhi. Ruta graveolens AUCT. P: 217. Euphatorium triplinerve VAHL. P : 113. Artemisia vulgaris LINN. P : 26

Dome, F.R. (1971) Animal experiments in pharmacological analysis. Charles & Thomson. Springfield. pp: 64 – 67

Heine,14, K. (1951) De nuttige planten van Indonesia. Van Hoeve s' Gravenhage, Groningen Bandung

Mardisiswojo, S. & Radjakmangunsudarso, H. (1965) Cabe puyang warisan nenek moyang. Prapanca.

Senosastroamidjojo, A. (1968). Obat-obat aseli Indonesia. Dian Rakyat

Staff Department of Pharmacology University of Edinburg. (1970). Pharmacological experiments on the isolated preparation. ed. II. E & S Livingstone, Edinburg & London

Van Steenis – Kruseman. (1953). Select Medicinal Indonesian Plants. Bulletin No. : 18. LIPI